



MAJOR WEEDS OF PADDY FIELDS IN DISTRICT RAJOURI (J&K) INDIA

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ABSTRACT

The present communication pertains to major weeds of paddy fields in district Rajouri (J&K). The study was based on extensive and intensive fields surveys made during different months of rainy season 2009-2011. During the course of field study the authors have selected 6 important paddy growing blocks in district Rajouri and divided them into two sites (S1 upland site containing the blocks Kalakote, Manjakote and Sunderbani in which irrigation facility is lacking and S2 lowland site containing blocks Nowshera, Rajouri and Budhal which is facilitated with irrigation). Frequent field trips were made twice a month in each site for collection of weeds. During this period the authors have reported a total of 65 weed species belonging to 23 angiospermic and 1 pteridophytic families from both the sites. Out of 23 angiospermic families the predominance was shown by monocot families Cyperaceae and Poaceae having 15 and 12 weed species, respectively. The pteridophytic family Marsileaceae was represented by 01 weed species.

Keywords: Paddy, weeds, yield, Rajouri.

INTRODUCTION

Paddy (*Oryza sativa* L.) is one of the most important food crops of the world and is the second emerging crop in India after wheat. India is the second largest producer of rice after China (Savary *et al.*, 2005). Beside its use for human food, paddy is a source for number of industrial products like rice starch, rice bran oil, flaked rice, puffed rice and rice husk etc. Being staple food it plays an important role in the economy of India hence occupies a central position in agricultural policy making (Dangwal *et al.*, 2011). The average per hectare yield of paddy in India is less as compared to China due to many factors like shortage and high cost labor; lack of irrigation facilities, quality of germplasm, agricultural output and ecological conditions etc., but the problems of weed is the major contributor in the loss of production.

Weed is a plant which is judged by man to be not of use and undesirable at a place where it flourishes (Patil *et al.*, 2010). The weeds that grow along with paddy crop results in low agricultural output. They are the major barriers to rice production because of their ability to compete for CO₂, space, moisture, sunlight and nutrients. Weedy crop sometimes leads to complete failure (Singh *et al.*, 2005). Out of total losses due to various biotic factors weeds are known to account for one third (Rao and Nagamani, 2007). The reduction in paddy yield due to weed composition ranges from 9-51 % (Mani *et al.*, 1968). Uncontrolled growth of weeds in paddy reduced the grain yield by 75.8, 70.6 and 62.6% in dry seeded rice, wet seeded rice and transplanted rice, respectively (Singh *et al.*, 2005). It has been observed that grain yield in paddy is drastically reduced if it is not deweeded at early stage of growth.

The study area is located at western part of Jammu division in the foot hill of Pir panjal range. It lies in between 32°-58' and 33°-35' latitude and 74°-81'

longitude at an elevation range of 470-6000m asl, covering an area of 2630 sq. kilometers.

MATERIALS AND METHODS

The present study deals with major weeds of paddy fields in district Rajouri (J&K). The study was based on extensive and intensive fields surveys made during different months of rainy season 2009-2011. During the course of field study the authors have selected 6 important paddy growing blocks in district Rajouri and divided them into two sites (S1 upland site and S2 lowland site). S1 site containing the blocks Kalakote, Manjakote and Sunderbani (in which irrigation facility is lacking) and S2 site containing blocks Nowshera, Rajouri and Budhal (which is facilitated with irrigation). Frequent field trips were made twice a month in each site for collection of weed species. During this course interviews were conducted from farmers and agriculturalists of each site about seasonal weed species and important notes on flowering and fruiting seasons of weeds were reported. The collected weed plants were pressed, dried, preserved and properly identified with the help of available literature and monographs by Sharma and Kachroo (1983), Swami and Gupta (1998), Kaul (1986) and confirmed from the authentic regional herbaria at Botanical Survey of India, Northern Circle (BSD), Dehradun, Forest Research Institute Herbarium (DD), Dehradun and deposited them in the H.N.B. Garhwal Central University Herbarium, Department of Botany, S.R.T. Campus, Badshahithaul, Tehri Garhwal, Uttarakhand, India.

RESULTS AND DISCUSSIONS

During the study period the authors have reported a total of 65 weeds belonging to 23 angiospermic and 01 pteridophytic families from both the sites (S1 and S2). Among the angiospermic families the dominance was



shown by monocot families Cyperaceae and Poaceae each having 15 and 12 weed species, respectively followed by dicot families Amaranthaceae and Asteraceae each containing 06 and 05 weeds, respectively. The family Euphorbiaceae contained 04 weeds while Commelinaceae was represented by 03 weeds. Each of the family Fabaceae, Polygonaceae and Scrophulariaceae, contained 02 weed species. The remaining families i.e., Aizoaceae, Brassicaceae, Convolvulaceae, Cuscutaceae, Fabaceae, Lythraceae, Malvaceae, Molluginaceae, Nyctaginaceae, Oxalidaceae, Portulacaceae, Rubiaceae, Urticaceae and Verbenaceae contained 01 weed species. The peritridophytic family i.e., Marsileaceae was represented by 01 weed species. (Table-1.)

District Rajouri is one of the hilly district of J&K state whose boundaries are attached to district Poonch in north, district Jammu in south, Udhampur in east and Mirpur (Pakistan) in the west. Most of the people of district Rajouri rely on agriculture as a source of livelihood. The economy of this district revolves around production of its cash crops. Paddy is the important kharif crop grown in this district. Both the upland and lowland methods of paddy cultivation are practiced, but the per hector yield of paddy in this district is less as compared to other parts of India due to many factors out of which the problem of weeds is of great concern. The persistent weed species give a severe competition to paddy crop and reduce the agricultural output. The weeds like *Echinochloa colona* and *Echinochloa crus-galli* show maximum infestation in lowland system and it is difficult to identify these weeds at early stage (Before flowering) because of their resemblance with crop plants. In upland system the members of family Cyperaceae i.e., *Cyperus rotundus*, *C. iria* and *C. difformis* etc. were dominant. The weeds like *Bidens bipinnata*, *Boerhaavia diffusa*, *Cassia pumila*, *Aeschynomene indica*, *Oxalis corniculata*, *Paspalidium flavidum*, *Physalis minima*, *Malvastrum coromandelianum* etc. were reported particularly from upland sites while the weeds like *Alternanthera philoxeroides*, *Marselia quadrifolia*, *Echinochloa crus-galli*, *Scripus setaceus*, *Lippia nodiflora* and *Nasturtium officinale* etc. were reported only from lowland sites. However some of the weeds reported from the study area i.e., *Achyranthes aspera*, *Eclipta alba*, *Commelina benghalensis*, *Cynodon dactylon*, *Euphorbia hirta*, *Euphorbia prostrata* etc. are of medicinal importance, used in traditional medicines by vaidhyas of district Rajouri. The weeds like *Amaranthus viridis*, *Boerhaavia diffusa*, *Trianthema portulacastrum*, *Portulaca oleracea*, *Oxalis corniculata* etc. are used in some cooking raciones of the study area.

(a) *Digitaria ciliaris* Retz.(b) *Scripus setaceus* L.(c) *Cyperus iria* L.



(d) *Cyperus rotundus* L.



(g) *Alternanthera sessilis* (L.) DC.



(e) *Echinochloa colona* L.



(h) *Ageratum conyzoides* L.



(f) *Echinochloa crus-galli* L.



(i) *Phyllanthus urinaria* L.

(j) *Saccharum spontaneum* L.(l) *Pouzolzia pentandara* Roxb.(k) *Alternanthera philoxeroides* (Mart.)**Figure-1(a) to (l).** Showing weeds of paddy fields in district Rajouri.**Table-1.** Showing 65 weeds of paddy fields in district Rajouri along with their families botanical names and flowering and fruiting seasons.

S. No.	Family	Botanical name	Flowering and fruiting season
1	Amaranthaceae	<i>Alternanthera sessilis</i> (L.) DC.	February- October
		<i>Alternanthera philoxeroides</i> (Mart.) Ariseb	August- November
		<i>Amaranthus viridis</i> L.	January- December
		<i>Amaranthus spinosus</i> L.	July- December
		<i>Achyranthes aspera</i> L.	March- December
		<i>Celosia argentea</i> L.	August- December
2	Asteraceae	<i>Ageratum conyzoides</i> L.	January- December
		<i>Bidens bipinnata</i> L.	March- December
		<i>Eclipta alba</i> L.	January- December
		<i>Galinsoga parviflora</i> Cav.Icon.	Throughout the year
		<i>Parthenium hysterophorus</i> L.	Throughout the year
3	Aizoaceae	<i>Trianthema portulacastrum</i> L.	August- December
4	Brassicaceae	<i>Nasturtium officinale</i> R.BR.	March- September
5	Commelinaceae	<i>Commelina benghalensis</i> L.	July- November
		<i>Cyanotis vaga</i> Lour.	July- October
		<i>Murdannia nudiflora</i> L.	August- November



6	Convolvulaceae	<i>Ipomoea eriocarpa</i> R.BR.	July- October
7	Cuscutaceae	<i>Cuscuta reflexa</i> Roxb.	June- December
8	Cyperaceae	<i>Cyperus iria</i> L.	September- December
		<i>Cyperus cuspidatus</i> Kunth.	August- November
		<i>Cyperus sanguinolentus</i> Vahl.	August November
		<i>Cyperus rotundus</i> L.	July- December
		<i>Cyperus difformis</i> L.	August- November
		<i>Cyperus esculentus</i> L.	July- December
		<i>Cyperus brevifolius</i> (Rottboell) Hasskarl.	August- November
		<i>Cyperus densicaespitosus</i> Mattf. and Kuk.	August- November
		<i>Cyperus corymbosus</i> Rottboell	July- December
		<i>Cyperus paniceus</i> (Rottboell) Boech.	August- September
		<i>Fimbristylis complanata</i> (Retz.) Link.	March- June
		<i>Fimbristylis falcata</i> (Vahl.) Kunth.	June- November
		<i>Fimbristylis ferruginea</i> (L.) Vahl	July- November
		<i>Fimbristylis quincangularis</i> (Vahl.)Kunth	July- November
<i>Scripus setaceus</i> L.	June- November		
9	Euphorbiaceae	<i>Euphorbia hirta</i> L.	January- December
		<i>Euphorbia Indica</i> Lam.	September- November
		<i>Euphorbia prostrata</i> Aiton.	March- November
		<i>Phyllanthus urinaria</i> L.	Throughout the year
10	Fabaceae	<i>Aeschynomene indica</i> L.	September- December
		<i>Cassia pumila</i> Lam.	August- October
11	Lythraceae	<i>Ammania baccifera</i> L.	August- December
12	Malvaceae	<i>Malvastrum coromandelianum</i> L.	Throughout the year
13	Marsileaceae	<i>Marselia quadrifolia</i> L.	August- December
14	Molluginaceae	<i>Mollugo pentaphylla</i> L.	August- November
15	Nyctaginaceae	<i>Boerhaavia diffusa</i> L.	August- December
16	Oxalidaceae	<i>Oxalis corniculata</i> L.	Throughout the year
17	Poaceae	<i>Cynodon dactylon</i> L.	January- December
		<i>Digitaria ciliaris</i> Retz.	August- November
		<i>Echinochloa colona</i> L.	July- October
		<i>Echinochloa crus-galli</i> L.	August- September
		<i>Eleusine indica</i> L.	July- November
		<i>Imperata cylindrica</i> (L.) P. Beauv.	January- December
		<i>Ophiurus corymbosus</i> Gertn.	August- November
		<i>Paspalum distichum</i> Auct.	March- December
		<i>Paspalum scrobiculatum</i> L.	July- December
<i>Paspalidium flavidum</i> Retz.	July- November		



		<i>Saccharum spontaneum</i> L.	September- November
		<i>Setaria glauca</i> L.	August- November
18	Polygonaceae	<i>Polygonum barbatum</i> L.	
		<i>Polygonum hydropiper</i> L.	January- December
19	Portulacaceae	<i>Portulaca oleracea</i> L.	April- September
20	Rubiaceae	<i>Oldenlandia corymbosa</i> L.	July- November
21	Scrophulariaceae	<i>Mazus pumilus</i> (Burm F.) Van Steen.	March- November
		<i>Torenia cordifolia</i> Roxb.	July- October
22	Solanaceae	<i>Physalis minima</i> L.	July- November
23	Urticaceae	<i>Pouzolzia pentandara</i> Roxb.	October- April
24	Verbenaceae	<i>Lippia nodiflora</i> L.	February- November

CONCLUSIONS

The present study was conducted as a first ever attempt from the study area to explore and identify the weeds of paddy crop. This will help the farmers and agriculturists of the study area to identify the weeds and thus help in planning a suitable strategy for their control as these weeds compete with paddy crop for resources and hence reduce its yield. They also affect the quality of germplasm and cause enormous loss to the farmers.

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